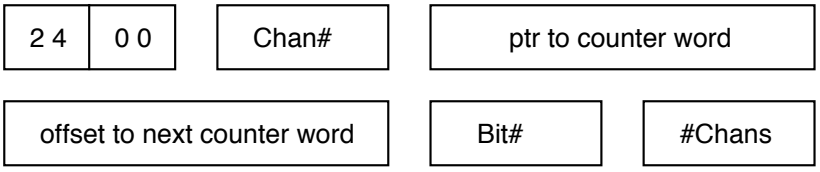
Monitoring Counters

Data Access Table function

Thu, Feb 18, 1993

This note describes a Data Access Table routine that monitors 16-bit counters to insure that co-processors are functioning normally. It can also monitor the rate of counter advance to show load level. By including a result status bit in the alarm scan, one can generate an alarm message when either a co-processor quits working, or access to a co-processor stops working.

Data Access Table entry layout:



The change in value of the counter word since the last time this entry was processed is stored as the reading of the given Chan# channel. This can be one 15 Hz cycle, or it can be more using an appropriate `0x7F` period entry to specify a sub-multiple rate of execution. For #Chans > 1, the offset longword is used to advance the ptr to get the next counter word address, which is then used to target the next channel.

An optional Bit# word specifies a Bit# that is set or cleared to indicate whether the change difference value is nonzero or not, respectively. (If this option is not used, the Bit# word should be zero.) The reading of this Bit can then be used to generate an alarm message when it is zero, indicating that the counter is not changing. This feature is probably easier than trying to predict what the value of the change should be in order to set the nominal and tolerance values to alarm on the analog channel.

If a bus error occurs when accessing the counter word, the delta value is set to zero, and the (optional) Bit is cleared, indicating that the counter is not changing.

Note that the longword offset value allows accessing multiple co-processor counter words across the vertical interconnect with a single entry, if the counter words are in the same location in each co-processor's memory.